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EXAMINER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Amendment

Claims 1, 4, 7, 10, 13, and 16; have been amended.

Response to Arguments

Applicant's arguments filed 4/8/2010 have been fully considered but they are not persuasive. In regards to Applicant's Remarks and Arguments, wherein Claims 1, 4, 7, 10, 13, and 16 discloses a radio cell station establishing Space Division Multiple Access with multiple personal station.

In response to applicant's arguments, the recitation "one or more reference signals, each being a signal train consisting of a plurality of bits included in a communication signal, defined in said radio cell station apparatus and optimized for each multiplexed connection number of the personal stations establishing said space division multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus, said radio cell station comprising:" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Rogard et al. (US 7062294 A1).

Regarding claim 1. A radio cell station apparatus to which a plurality of personal stations can establish space division multiple access (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.), one or more reference signals (col. 5 lines: 34-40, Rogard et al. teaches sending signals from mobile terminals to base station), each being a signal train consisting of a plurality of bits included in a communication signal (fig. 3a-3e, col. 12 lines: 37-col. 13 lines: 11; Rogard et al. shows frames of data; these frames are made by a sequence of bits hence having a signal that has a plurality of bits in a communication signal), defined in said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 3, Rogard et al. teaches spatial processor for signals received) and optimized for each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 14, Rogard et

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al. teaches SDMA possible for downlink direction for a plurality of mobile terminals),
said radio cell station comprising:

a multiplexed connection number detection unit for detecting a number of multiplexed connections of the personal stations establishing space division multiple access during communication (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station);
and a reference signal allocation unit (col. 5 lines: 40-55, Rogard et al. teaches reference signal allocation) for:

switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to a change in the number of multiplexed connections (col. 6 lines: 4-15, Rogard et al. teaches having references signals for mobile terminals by SDMA protocol for the advantages enhancements for mobile terminals such as mitigating interference) to reference signals for maintaining communication quality even alter the number of multiplexed connections is changed, and allocating the switched reference signals to said plurality of personal stations respectively, when the change in the number of multiplexed connections is detected during communication in said multiplexed connection number detection unit (col. 6 lines: 15-55, Rogard et al. teaches SDMA protocol and spatial processor for the advantages enhancement for mobile terminals such as mitigating interference by using the

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weighting parameters and various mechanisms such as calibration factors described in the reference).

Regarding claim 4. A personal station establishing space division multiple access to a radio cell station apparatus (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.), one or more reference signals (col. 5 lines: 34-40, Rogard et al. teaches sending signals from mobile terminals to base station), each being a signal train consisting of a plurality of bits included in a communication signal (fig. 3a-3e, col. 12 lines: 37-col. 13 lines: 11; Rogard et al. shows frames of data; these frames are made by a sequence of bits hence having a signal that has a plurality of bits in a communication signal), defined in said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 3, Rogard et al. teaches spatial processor for signals received) and optimized for each multiplexed connection number of the personal station establishing said space division multiple access to said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 14, Rogard et al. teaches SDMA possible for downlink direction for a plurality of mobile terminals), said radio cell station comprising:

a receiving unit for receiving a request for switching a reference signal from said radio cell station apparatus in accordance with a change in the number of multiplexed connections of the personal stations establishing space division multiple access during communication (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this

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case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station);

and

a switching unit for switching the reference signal to a reference signal (col. 6 lines: 4-15, Rogard et al. teaches having references signals for mobile terminals by SDMA protocol for the advantages enhancements for mobile terminals such as mitigating interference) for maintaining communication quality even after the number of multiplexed connections is changed and transmitting a response to the request for switching to said radio cell station apparatus (col. 6 lines: 15-55, Rogard et al. teaches SDMA protocol and spatial processor for the advantages enhancement for mobile terminals such as mitigating interference by using the weighting parameters and various mechanisms such as calibration factors described in the reference).

Regarding claim 7. A method of controlling a reference signal performed by a radio cell station apparatus to which a plurality of personal stations can establish space division multiple access (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.), one or more reference signals, each being a signal train consisting of a plurality of bits included in a communication signal (fig. 3a-3e, col. 12 lines: 37-col. 13 lines: 11; Rogard et al. shows frames of data; these frames are made by a sequence of bits hence having a signal that has a plurality of bits in a communication signal), defined in said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 3, Rogard et al. teaches spatial processor for signals received)

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and optimized for each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 14, Rogard et al. teaches SDMA possible for downlink direction for a plurality of mobile terminals), said method comprising the steps of:

detecting a number of multiplexed connections of the personal stations establishing space division multiple access during communication (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.); and

when a change in the number of multiplexed connections is detected in said step of detecting the number of multiplexed connections (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station), switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals for maintaining communication quality even after the number of multiplexed connections is changed, and allocating the reference signals to said plurality of personal stations respectively (col. 6 lines: 15-55, Rogard et al. teaches SDMA protocol and spatial processor for the advantages enhancement for mobile terminals such as mitigating interference by using

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the weighting parameters and various mechanisms such as calibration factors described in the reference).

Regarding claim 10. (Currently Amended) A method of controlling a reference signal performed by a personal station establishing space division multiple access to a radio cell station apparatus (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.), one or more reference signals, each being a signal train consisting of a plurality of bits included in a communication signal (fig. 3a-3e, col. 12 lines: 37—col. 13 lines: 11; Rogard et al. shows frames of data; these frames are made by a sequence of bits hence having a signal that has a plurality of bits in a communication signal), defined in said radio cell station apparatus and optimized for each multiplexed connection number of the personal station establishing said space division multiple access to said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 3, Rogard et al. teaches spatial processor for signals received), said radio method comprising the steps of:

receiving a request for switching a reference signal from said radio cell station apparatus in accordance with change in the number of multiplexed connections of the personal stations establishing space division multiple access during communication (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station); and switching the

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reference signal to a reference signal for maintaining communication quality even after the number of multiplexed connections is changed and transmitting a response to the request for switching to said radio cell station apparatus (col. 6 lines: 15-55, Rogard et al. teaches SDMA protocol and spatial processor for the advantages enhancement for mobile terminals such as mitigating interference by using the weighting parameters and various mechanisms such as calibration factors described in the reference).

Regarding claim 13. (Currently Amended) A computer program embodied in a computer readable medium, for controlling a reference signal performed by a radio cell station apparatus to which a plurality of personal stations can establish space division multiple access (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.), one or more reference signals, each being a signal train consisting of a plurality of bits included in a communication signal (fig. 3a-3e, col. 12 lines: 37—col. 13 lines: 11; Rogard et al. shows frames of data; these frames are made by a sequence of bits hence having a signal that has a plurality of bits in a communication signal), defined in said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 3, Rogard et al. teaches spatial processor for signals received) and optimized for each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 14, Rogard et al. teaches SDMA possible for downlink direction for a plurality of mobile terminals), causing a computer to execute the steps of:

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detecting number of multiplexed connections of the personal stations establishing space division multiple access during communication (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.); and

when a change in the number of multiplexed connections is detected in said step of detecting the number of multiplexed connections (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station), switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station) for maintaining communication quality even after the number of multiplexed connections is changed, and allocating the reference signals to said plurality of personal stations respectively (col. 6 lines: 15-55, Rogard et al. teaches SDMA protocol and spatial processor for the advantages enhancement for mobile terminals such as mitigating interference by using the

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weighting parameters and various mechanisms such as calibration factors described in the reference).

Regarding claim 16. (Currently Amended) A computer program embodied in a computer readable medium, for controlling a reference signal performed by a personal station establishing space division multiple access to a radio cell station apparatus (abstract, col. 5 lines: 55—col. 6 lines: 33, Rogard et al. teaches base station and a plurality of personal stations or mobile terminals and embodiment of applying SDMA use with the invention of Rogard et al.), one or more reference signals, each being a signal train consisting of a plurality of bits included in a communication signal (fig. 3a-3e, col. 12 lines: 37-col. 13 lines: 11; Rogard et al. shows frames of data; these frames are made by a sequence of bits hence having a signal that has a plurality of bits in a communication signal), defined in said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 3, Rogard et al. teaches spatial processor for signals received) and optimized for [[for]] each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus (col. 5 lines: 60—col. 6 lines: 14, Rogard et al. teaches SDMA possible for downlink direction for a plurality of mobile terminals), causing a computer to execute the steps of:

receiving a request for switching a reference signal from said radio cell station apparatus in accordance with change in the number of multiplexed connections of the personal stations establishing space division multiple access during communication (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink

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weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station); and switching the reference signal to a reference signal for maintaining communication quality even after the number of multiplexed connections is changed and transmitting a response to the request for switching to said radio cell station apparatus (col. 6 lines: 15-55, Rogard et al. teaches SDMA protocol and spatial processor for the advantages enhancement for mobile terminals such as mitigating interference by using the weighting parameters and various mechanisms such as calibration factors described in the reference).

Consider claim 2. The radio cell station apparatus according to claim 1, further comprising a storage unit for storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein when the number of multiplexed connections of the personal stations establishing space division multiple access is changed, said reference signal allocation unit selects reference signals optimal for the changed number of multiplexed connections from said storage unit and allocates the selected reference signals to said plurality of personal stations respectively (col. 8 lines: 39-45, Rogard et al. teaches that the smart antenna system changes the number of signals to accommodate in download).

Consider claim 3. The radio cell station apparatus according to claim 2, wherein said reference signal stored in said storage unit is calculated for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation

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characteristic (col. 9 lines: 50—col. 10 lines: 5, Rogard et al. teaches correlation means).

Consider claim 5. The personal station according to claim 4, further comprising a storage unit for storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein when the request for switching the reference signal is received from said radio cell station apparatus, a reference signal optimal for the changed number of multiplexed connections is selected from said storage unit and a response to the request for switching including the selected reference signal is transmitted to said radio cell station apparatus (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station).

Consider claim 6. The personal station according to claim 5, wherein said reference signal stored in said storage unit is calculated for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross- correlation characteristic (col. 9 lines: 50—col. 10 lines: 5, Rogard et al. teaches correlation means).

Consider claim 8. (Original) The method of controlling a reference signal according to claim 7, further comprising the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein when the number of multiplexed connections of the personal

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stations establishing space division multiple access is changed, reference signals optimal for the changed number of multiplexed connections that have been stored are selected and the selected reference signals are allocated to said plurality of personal stations respectively (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station).

Consider claim 9. (Original) The method of controlling a reference signal according to claim 8, Wherein the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access further includes the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic (col. 9 lines: 50—col. 10 lines: 5, Rogard et al. teaches correlation means).

Consider claim 11. (Original) The method of controlling a reference signal according to claim 10, further comprising the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein when the request for switching the reference signal is received from said radio cell station apparatus, a reference signal optimal for the changed number of multiplexed connections that has been stored is selected and a response to the request for switching including the selected reference signal is transmitted to said radio cell station apparatus (abstract, col. 6 lines: 34-55, Rogard et al. teaches base

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station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to multiplexed connections of devices establishing communication has to be known by base station).

Consider claim 12. (Original) The method of controlling a reference signal according to claim 11, wherein the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access further includes the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic (col. 9 lines: 50—col. 10 lines: 5, Rogard et al. teaches correlation means).

Consider claim 14. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 13, further causing the computer to execute the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein when the number of multiplexed connections of the personal stations establishing space division multiple access is changed, reference signals optimal for the changed number of multiplexed connections that have been stored are selected and the selected reference signals are allocated to said plurality of personal stations respectively (abstract, col. 6 lines: 34-55, Rogard et al. teaches base station various mechanism to determine downlink smart antenna processing strategy defined in this case by downlink weighting parameters, hence, information as to

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multiplexed connections of devices establishing communication has to be known by base station).

Consider claim 15. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 14, wherein the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access further causes the computer to execute the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic (col. 9 lines: 50—col. 10 lines: 5, Rogard et al. teaches correlation means).

Consider claim 17. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 16, further causing the computer to execute the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein when the request for switching the reference signal is received from said radio cell station apparatus, a reference signal optimal (col. 5 lines: 40-55) for the changed number of multiplexed connections that has been stored is selected and a response to the request for switching including the selected reference signal is transmitted to said radio cell station apparatus (col. 8 lines: 39-45, Rogard et al. teaches that the smart antenna system changes the number of signals to accommodate in download).

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Consider claim 18. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 17, wherein the step of storing a reference signal optimized (col. 5 lines: 40-55) for each number of multiplexed connections of the personal stations establishing space division multiple access further causes the computer to execute the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic (col. 9 lines: 50—col. 10 lines: 5, Rogard et al. teaches correlation means).

Consider claim 19. (Previously Presented) The radio cell station apparatus according to claim 1, wherein an optimal reference signal pattern (col. 5 lines: 40-55) for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner (col. 6 lines: 15-55, Rogard et al. teaches weighting factors and filtering means for processing parameters for signals by spatio-temporal or spatial processing).

Consider claim 20. (Previously Presented) The personal station according to claim 4, wherein an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner (col. 6 lines: 15-55, Rogard et al. teaches weighting factors and filtering means for processing parameters for signals by spatio-temporal or spatial processing).

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Consider claim 21. (Previously Presented) The method of controlling a reference signal according to claim 7, wherein an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner (col. 6 lines: 15-55, Rogard et al. teaches weighting factors and filtering means for processing parameters for signals by spatio-temporal or spatial processing).

Consider claim 22. (Previously Presented) The method of controlling a reference signal according to claim 10, wherein an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner (col. 6 lines: 15-55, Rogard et al. teaches weighting factors and filtering means for processing parameters for signals by spatio-temporal or spatial processing).

Consider claim 23. (Previously Presented) The computer program, embodied in a computer readable medium, for controlling a reference signal according to claim 13, wherein an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner (col. 6 lines: 15-55, Rogard et al. teaches weighting factors and filtering means for processing parameters for signals by spatio-temporal or spatial processing).

Consider claim 24. (Previously Presented) The computer program, embodied in a computer readable medium, for controlling a reference signal according to claim 16, wherein an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner (col. 6 lines: 15-55, Rogard et al. teaches weighting factors and filtering means for processing parameters for signals by spatio-temporal or spatial processing).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIEGO HERRERA whose telephone number is (571)272-0907. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diego Herrera/
Examiner, Art Unit 2617

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